

05/24/00

A

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
04783.012001

Total Pages in this Submission

TO THE ASSISTANT COMMISSIONER FOR PATENTSBox Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

PRINTER CAPABLE OF NETWORK CONNECTION AND METHOD FOR CONTROLLING SAID PRINTER

and invented by:

Toshihiro SHIMAIf a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Enclosed are:

Application Elements

1. ☐ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 49 pages and including the following:
 - a. ☒ Descriptive Title of the Invention
 - b. ☐ Cross References to Related Applications (if applicable)
 - c. ☐ Statement Regarding Federally-sponsored Research/Development (if applicable)
 - d. ☐ Reference to Microfiche Appendix (if applicable)
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings (if drawings filed)
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure

**022511**

PATENT TRADEMARK OFFICE

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
04783.012001

Total Pages in this Submission

Application Elements (Continued)

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
- a. ☒ Formal Number of Sheets 10
- b. ☐ Informal Number of Sheets _____
4. ☒ Oath or Declaration
- a. ☐ Newly executed *(original or copy)* ☒ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application,
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under
Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby
incorporated by reference therein.
6. ☐ Computer Program in Microfiche *(Appendix)*
7. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy *(identical to computer copy)*
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☐ Assignment Papers *(cover sheet & document(s))*
9. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*
10. ☐ English Translation Document *(if applicable)*
11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☒ Certificate of Mailing

☐ First Class ☒ Express Mail *(Specify Label No.):* EL521606103US

UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
04783.012001

Total Pages in this Submission

Accompanying Application Parts (Continued)

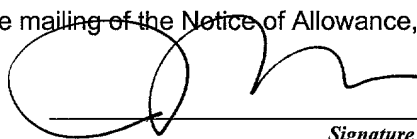
15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) This application claims priority under Title 35, U.S.C. 119 of Japanese Patent Application No. 11-142685, filed May 24, 1999 and Japanese Patent Application No. 2000-63791, filed March 8, 2000.
16. ☐ Additional Enclosures (please identify below):

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	13	- 20 =	0	x \$18.00	\$0.00
Indep. Claims	9	- 3 =	6	x \$78.00	\$468.00
Multiple Dependent Claims (check if applicable) <input checked="" type="checkbox"/>					\$260.00
BASIC FEE					\$690.00
OTHER FEE (specify purpose)					\$0.00
TOTAL FILING FEE					\$1,418.00

- ☐ A check in the amount of _____ to cover the filing fee is enclosed. **FILING FEES DEFERRED**
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **50-0591** as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of _____ as filing fee.
- ☐ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).


Signature

Jonathan P. Osha
Reg. No. 33,986
ROSENTHAL & OSHA L.L.P.
700 Louisiana Street, Suite 4550
Houston, Texas 77002

Dated: May 23, 2000

CC:

Telephone (713) 228-8600
Facsimile (713) 228-8778

APPLICATION
FOR
UNITED STATES LETTERS PATENT

TITLE: **PRINTER CAPABLE OF NETWORK CONNECTION AND
METHOD FOR CONTROLLING SAID PRINTER**

APPLICANTS: **Toshihiro SHIMA**

"EXPRESS MAIL" Mailing Label Number: EL521606103US
Date of Deposit: May 23, 2000



022511

PATENT TRADEMARK OFFICE

PRINTER CAPABLE OF NETWORK CONNECTION AND
METHOD FOR CONTROLLING SAID PRINTER

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to the technology of printers applicable to networks. More particularly, this invention relates to the technology of printers capable of direct printing without fetching information resources existing at a certain node on a network and sending them into computers.

Description of the Related Art

A computer network system is composed of a network and many nodes interconnected through the network. Nodes mean, for example, computers, printers, and other equipment. Nodes connected to a network exchange information with each other by utilizing various communication services.

For example, with a system including a printer connected to a network such as LAN (Local Area Network), a computer sends a print request through the network to the printer and the printer performs printing on the basis of the print request.

With a WWW (World Wide Web) system, a client computer accesses server computers, that is, Web servers or Web sites

in accordance with a URI (Uniform Resource Identifier) and acquires information resources such as Web pages. The client computer then displays the acquired information resource through a browser.

With the prior art, when a user attempts to print information resources existing at a certain node on a network, the user accesses the node from a computer to download the information resources and then sends a print request from the computer to the printer based on the information resources. In other words, the user cannot make the printer directly fetch the information resources existing at the node to enable printing. Moreover, since the information resources to be printed is sent from the node to the computer and then from the computer to the printer, heavier load than necessary is applied to the network.

SUMMARY OF THE INVENTION

It is an object of this invention to provide a printer which may adapt to a network environment. Specifically, it is an object of this invention to enable a printer to directly print the information resources existing at a certain node without having a computer fetch such information resources.

A first feature of this invention is that a printer receives a print request, which is sent from a computer and which includes a request to a peripheral device to acquire

print data, and the printer then sends the acquisition request to the peripheral device and performs printing on the basis of the print data sent from the peripheral device in response to the acquisition request. Accordingly, the printer is capable of receiving the print data from the peripheral device instead of receiving the print data from the computer. The acquisition request should preferably include information (such as URI or URL) about the location of the peripheral device on a network.

In response to a given transfer request sent from the computer prior to the receipt of the print request, the printer sends page data, which composes a print acceptance screen to send the print request, to the computer. Examples of the page data are HTML and XML. The page data may include programs (scripts). Accordingly, the computer is capable of displaying the print acceptance screen on the basis of the page data and accepting the input made by users.

A second feature of this invention is that in response to a given transfer request sent from a computer, a printer sends, to the computer, page data which composes a print acceptance screen for the computer to request the printing of print data, and the computer sends to a peripheral device a print request including a request to acquire the print data on the basis of the print acceptance screen, the peripheral device then acquires and sends the print data in response to the print request, and the printer receives the print data and performs printing on the basis of the received print data.

[illegible]

A fourth feature of this invention is that a computer displays a print acceptance screen on the basis of page data sent from a given node, and the print acceptance screen comprises a first area for a user to specify a peripheral device to acquire print data, a second area for a user to specify a given condition when the peripheral device acquires the print data, and a third area for a user to specify a printer made to print on the basis of the print data, and the computer sends an acquisition/print request to the peripheral device specified in the first area to cause the peripheral device to acquire the print data in accordance with the given condition specified in the second area and to send the acquired print data to the printer specified in the third area, thereby causing the printer to print.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram depicting a schematic structure of a print system according to Embodiment 1.

Fig. 2 is a block diagram depicting a functional structure of a printer according to Embodiment 1.

Fig. 3 is a block diagram depicting the details of a network control unit according to Embodiment 1.

Fig. 4 is a sequence diagram which explains an example operation of the print system according to Embodiment 1.

Fig. 5 is a diagram depicting an example of a print acceptance screen.

Fig. 6 is a diagram depicting a schematic structure of a print system according to Embodiment 2.

Fig. 7 is a block diagram depicting a functional structure of a client computer according to Embodiment 2.

Fig. 8 is a block diagram depicting a functional structure of a peripheral device according to Embodiment 2.

Fig. 9 is a sequence diagram which explains an example operation of the print system according to Embodiment 2.

Fig. 10 is a schematic structure of a client computer according to Embodiment 3.

Fig. 11 is a sequence diagram which explains an example operation of a print system according to Embodiment 3.

Fig. 12 is a diagram depicting an example of a print acceptance screen.

Fig. 13 is a diagram depicting a schematic structure of a client computer according to Embodiment 4.

Fig. 14 is a sequence diagram which explains an example operation of a print system according to Embodiment 4.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiments of this invention are hereinafter explained with reference to the attached drawings.

[Embodiment 1]

Fig. 1 is a diagram depicting a schematic structure of a print system according to Embodiment 1. Referring to Fig. 1, a printer 1 is connected through network N to a client computer 2 and a peripheral device 3. The printer 1 of Embodiment 1 has a so-called Web server function and, therefore, is capable of performing processing according to various requests based on HTTP (Hyper Text Transfer

Protocol) sent from the client computer 2 and the like. The client computer 2 is typically a terminal unit operated by a user. Examples of the peripheral device 3 include a scanner and a digital camera, and the peripheral device 3 may be a file server. The peripheral device 3 performs its proper processing in response to a given request sent from the printer 1 and sends given data thereby obtained to the printer 1. For example, in the case of a scanner, it captures given images and sends the image data to the printer 1. In this case, the print system may be structured in a manner such that the printer 1 and the scanner conduct communications on the basis of specific network protocols, or such that communications are conducted based on the HTTP.

Embodiment 1 is characterized in that a user inputs given information, including information about the acquisition of the print data, according to a print acceptance screen (Web page) supplied from the printer 1, a print request including the given information is then sent to the printer 1, and the printer 1 which has received the printer request acquires the print data according to the given information and then performs printing. For example, assuming that a user is trying to make the printer 1 directly print the images captured by the scanner as the peripheral device 3, the client computer 2 sends a request to transfer the print acceptance screen to the printer 1 and then displays the print acceptance screen supplied from the printer 1 ((1) in Fig. 1). The user inputs, on the print acceptance screen, a directive to capture images by means of the scanner and the directive is then sent as a print

request to the printer 1 ((2) in Fig. 1). When the printer 1 receives this print request, it gives the directive to the scanner to capture images and the scanner then sends the captured images to the printer 1 ((3) in Fig. 1). The printer 1 receives the images sent from the scanner and prints the images on a print record medium.

Fig. 2 is a block diagram depicting a functional structure of the printer according to Embodiment 1. As shown in Fig. 2, a communicating unit 21 performs processing to conduct communications between the client computer 2 and the peripheral device 3. Specifically speaking, the communicating unit 21 physically and logically converts data received through the network N and delivers the converted data to a network control unit 22. Moreover, the communicating unit 21 physically and logically converts data delivered from the network control unit 22 and sends the converted data onto the network N. If the communicating unit 21 is connected to, for example, a LAN, the communicating unit 21 is composed of, for example, a driver or the like corresponding to various hardware and various kinds of protocols such as TCP/IP.

The network control unit 22 interprets data sent through the communicating unit 21 and performs various processing on the basis of the results of interpretation. Specifically speaking, if the network control unit 22 receives a request to transfer Web pages, the network control unit 22 reads page data, which composes the Web pages specified by the transfer request, from a page data storage

unit 23 and sends the page data to the communicating unit 21 so that such page data will be sent to the original requester. If another node (peripheral device 3) makes a request to acquire the print data, the network control unit 22 acquires the print data from the specified peripheral device and sends the acquired print data to a job buffer 24. Details of the network control unit 22 will be described later.

The page data storage unit 23 stores the page data to be supplied to the client computer 2. This page data composes a print acceptance screen by means of a browser on the client computer 2.

The job buffer 24 temporarily stores print data sent out through the network control unit 22. In order to enable the job buffer 24 to retain a plurality of the print data, the job buffer 24 should preferably be composed of auxiliary storages such as hard disks. The print data stored on the job buffer 24 is sequentially read out to an image generating unit 25.

The image generating unit 25 generates dot image data, which composes pixels in print images, on the basis of the print data stored on the job buffer 24 and expands (or writes) it in an image memory 26. The image generating unit 25 may be designed to convert the print data once into an intermediate code, expand it in a storage area (not shown in the drawing), and then expand it in the image memory 26.

The image memory 26 is typically composed of DRAM or SRAM and has storage capacity that can be adequately set according to a print speed of a print engine 28, a bandwidth of printing, and other factors.

An engine control unit 27 controls the print engine 28, reads the image data expanded in the image memory 26 and supplies the image data to the print engine 28. The print engine 28 carries out printing on a print record medium such as paper.

For example, in the case of a laser printer, the print engine 28 is composed of, for example, a laser illumination mechanism, a photosensitive drum, and a paper feed mechanism. The print engine 28 is selected as appropriate, for example, for monochrome printing or color printing, or as a high-speed type or a low-speed type.

Fig. 3 is a block diagram showing details of the network control unit according to Embodiment 1. As shown in Fig. 3, the network control unit 22 includes an interpreting unit 31, a reading unit 32, and an acquisition request unit 33.

The interpreting unit 31 interprets data sent from the communicating unit 21 and performs processing according to the results of interpretation. Specifically speaking, if the interpreting unit 31 determines that the data sent from the communicating unit 21 is a request to transfer page data which composes a print acceptance screen, the

interpreting unit 31 notifies the reading unit 32 of such effect. If the interpreting unit 31 determines that the data sent from the communicating unit 21 is a print request, including a request to the peripheral device 3 to acquire print data, the interpreting unit 31 notifies the acquisition request unit 33 of the acquisition request. Moreover, if the interpreting unit 31 determines that the received data is the print data sent from the peripheral device 3 in response to the acquisition request from the acquisition request unit 33, the interpreting unit 31 sends such data to the job buffer 24.

The reading unit 32 reads given page data from the page data storage unit 23 according to the results of interpretation by the interpreting unit 31 (the request to transfer page data) and sends the page data to the communicating unit 21. Consequently, the read page data will be eventually sent to the original requester (client computer 2).

The acquisition request unit 33 sends to the communicating unit 21 a request to acquire the print data from the peripheral device 3 according to the results of interpretation by the interpreting unit 31 (the acquisition request to the peripheral device 3). In this case, for example, if the acquirer of the print data is a scanner, the acquisition request should preferably include information (or parameters) about image capturing such as resolution and number of colors. Accordingly, the request to acquire the print data is sent to the peripheral device

3 as specified by the information about the location on the network, and the peripheral device 3 sends the print data to the printer 1. The print data sent from the peripheral device 3 in response to the acquisition request will be sent to the job buffer 24.

Fig. 4 is a sequence diagram which explains an example operation of the print system according to Embodiment 1. As shown in Fig. 4, the client computer 2 requests the printer 1 to transfer the page data which composes the print acceptance screen ((1) in Fig. 4). Such a transfer request is realized, for example, when a user designates information about the location of the page data on the network by utilizing the browser. The printer 1 reads out given page data from the page data storage unit 23 on the basis of the transfer request sent from the client computer 2 ((2) in Fig. 4) and transfers the page data to the client computer 2 which is the original requester ((3) in Fig. 4). Accordingly, the print acceptance screen will be displayed through the browser of the client computer 2. Fig. 5 is a diagram illustrative of an example of the print acceptance screen. A user inputs given information on this print acceptance screen. In Fig. 5, a scanner on the network is designated as an acquirer of the print data and various parameters (control information) are also designated as conditions for the scanner to acquire the print data. When a user inputs necessary information on the print acceptance screen and selects the "PRINT" button (for example, with click operation), the client computer 2 sends a print request based on the input information to the printer 1 ((4)

in Fig. 4). When the printer 1 accepts the print request sent from the client computer 2, it interprets the print request ((5) in Fig. 4) and sends an acquisition request to the peripheral device 3 indicated by URL of the print data (6) in Fig. 4). When the peripheral device 3 accepts the acquisition request sent from the printer 1, it acquires the print data by performing its proper processing in accordance with the conditions (parameters) necessary for the acquisition ((7) in Fig. 4) and sends the print data to the printer 1 ((8) in Fig. 4). If the peripheral device 3 is, for example, a scanner, it reads a manuscript and converts it into a given data format and sends the converted data to the printer 1. Subsequently, when the printer 1 receives the print data in response to the acquisition request, the printer 1 generates image data based on the print data and supplies the image data to the print engine 28, thereby performing printing ((9) in Fig. 4).

In the above-described case, the client computer 2 may make a request to transfer information about a print preview screen to the peripheral device 3.

As stated above, according to Embodiment 1, the client computer 2 is capable of causing the printer 1 to print the print data existing at the peripheral device 3 on the network through the print acceptance screen provided by the printer 1. Accordingly, the print data existing at the peripheral device 3 is not transferred to the client computer 2 once, but is transferred directly to the printer 1. Therefore, it is possible to lighten the load on the client computer

2 and the network.

[Embodiment 2]

Fig. 6 is a diagram depicting a schematic structure of a print system according to Embodiment 2. Embodiment 2 is characterized in that a user gives a print directive by inputting given information, including information about the acquisition of the print data, according to a print acceptance screen supplied from a printer 1, a client computer 2 requests a peripheral device 3 according to the given information to send the print data together with a print request to the printer 1, and the printer 1 which has received them prints the print data. For example, assuming that a user is trying to make the printer 1 directly print the images captured by a scanner as the peripheral device 3, the client computer 2 sends a request to transfer the print acceptance screen to the printer 1 and then displays the print acceptance screen supplied from the printer 1 ((1) in Fig. 6). The user inputs, on the print acceptance screen, a directive to capture images by means of the scanner and the directive is then sent together with a print request to the scanner ((2) in Fig. 6). When the scanner captures the images according to the image capture directive, it sends out the captured images and the print request to the printer 1 ((3) in Fig. 6). Subsequently, the printer 1 prints the images sent from the scanner.

Fig. 7 is a block diagram depicting a functional structure of a browser on the client computer 2 according

to Embodiment 2. The browser of Embodiment 2 has a function to access Web servers and also a function to determine where to connect on the basis of information inputted on the print acceptance screen. Such functions are implemented, for example, as the printer 1 transfers programs (scripts) together with page data and an interpreter incorporated into the browser interprets and executes the programs.

Referring to Fig. 7, a user interface unit (hereinafter referred to as the "user I/F unit") 71 presents a browser screen to a user and realizes a function for the user to input given information on the basis of the browser screen. A transfer request unit 72 sends a transfer request to a communicating unit 73 in order to request a transfer of page data to a given node (the printer 1 in this example) on the network. The given node is represented by, for example, URL and is specified in a given input field on the browser screen presented by the user I/F unit 71. The communicating unit 73 sends the transfer request from the transfer request unit 72 onto the network and receives data which has been sent to it and sends the data to a responding unit 74. The communicating unit 73 corresponds to the communicating unit 21 of the printer 1 as described above. The responding unit 74 sends the data sent from the communicating unit 73 to the user I/F unit 71. Accordingly, the user I/F unit 71 displays a screen which is composed on the basis of the page data transferred from the node designated by the user. In Embodiment 2, the printer 1 is designated as the node and the print acceptance screen is displayed on the basis of the page data, including programs,

transferred from the printer 1. A print request unit 75 generates a print request on the basis of given information inputted by the user on the print acceptance screen. Specifically speaking, when the print request unit 75 accepts the given information through the print acceptance screen, it generates the print request including an acquisition request to an acquirer of the print data and sends it to the communicating unit 73 so that the communicating unit 73 will further send the print request. The print request herein used is a request to cause the printer 1 to print the acquired print data. The communicating unit 73 which has received the print request from the print request generating unit 75 sends the print request to the acquirer of the print data.

Fig. 8 is a block diagram depicting a functional structure of the peripheral device 3 according to Embodiment 2. As shown in Fig. 8, the peripheral device 3 has a communicating unit 81, a request interpreting unit 82, an acquisition processing unit 83, and a print request unit 84.

The communicating unit 81 receives data sent from the client computer 2 and sends the data to the request interpreting unit 82, and also sends the print request sent from the print request unit 84 onto the network N so that the print request will be sent to the printer 1. The request interpreting unit 82 interprets the print request sent from the client computer 2 through the network N, sends the acquisition request for the print data, which is included

in the print request, to the acquisition processing unit 83, and sends to the print request unit 84 the print request to the printer 1. The acquisition processing unit 83 performs processing to acquire the print data indicated by the acquisition request. If the peripheral device 3 is, for example, a scanner, the scanner reads a manuscript placed on a manuscript plate and converts it into a given data format and sends the data to the print request unit 84. If the peripheral device 3 is a file server, the file server reads a file from the directory designated by the acquisition request and sends the file to the print request unit 84. The print request unit 84 generates the print request to make the printer 1 print on the basis of the print data sent from the acquisition processing unit 83 and sends the print request to the communicating unit 81. In other words, when the peripheral device 3 receives the print request, including the acquisition request, from the client computer 2, it acquires the print data in response to the acquisition request and then sends to the printer 1 the print request to cause the printer 1 to print the print data.

Fig. 9 is a diagram which explains an example operation of the print system according to Embodiment 2. As shown in Fig. 9, the client computer 2 requests the printer 1 to transfer the page data which composes the print acceptance screen ((1) in Fig. 9). Such a transfer request is realized, for example, when a user designates information about the location of the page data on the network by utilizing the browser. The printer 1 reads out desired page data from the page data storage unit 23 on the basis of the transfer

request sent from the client computer 2 ((2) in Fig. 9) and transfers the page data to the client computer 2 which is the original requester ((3) in Fig. 9). Accordingly, as shown in Fig. 5, the print acceptance screen will be displayed on the browser of the client computer 2. When a user inputs necessary information on the print acceptance screen and selects the "PRINT" button (for example, with click operation), the client computer 2 sends a print request based on the input information to the peripheral device 3 ((4) in Fig. 9). When the "PRINT" button is selected, the browser issues the print request by designating the peripheral device 3 indicated in the section of "URL of Print data" as a new connecting counterpart (or a receiver) so that the print data acquired by the peripheral device 3 will be sent to the printer 1, the present connecting counterpart. When the peripheral device 3 receives the print request sent from the printer 1, the peripheral device 3 performs its proper processing on the basis of the acquisition request included in the print request, thereby acquiring the print data ((5) in Fig. 9). The peripheral device 3 sends the print request to the printer 1 to cause the printer 1 to print the print data ((6) in Fig. 9). If the peripheral device 3 is, for example, a scanner, it reads a manuscript and converts it into a given data format and sends the converted data to the printer 1. Subsequently, receiving the print data, the printer 1 generates image data based on the print data and supplies the image data to the print engine 28, thereby performing printing ((7) in Fig. 9).

As stated above, according to Embodiment 2, the client computer 2 is capable of causing the printer 1 to print the print data existing at the peripheral device 3 on the network through the print acceptance screen provided by the printer 1. Specifically, according to Embodiment 2, the print request together with the request to acquire the print data are sent to the peripheral device 3, and after the peripheral device 3 acquires the print data in response to the acquisition request, the print request is sent to the printer 1. Accordingly, the print data existing at the peripheral device 3 is not transferred to the client computer 2 once, but is transferred directly to the printer 1. Therefore, it is possible to lighten the load on the client computer 2 and the network.

[Embodiment 3]

Fig. 10 is a diagram depicting a schematic structure of a print system according to Embodiment 3. Embodiment 3 is a variation of Embodiment 1 and is characterized in that a node, including a printer, on a network other than a printer to perform printing sends a print acceptance screen. This is particularly effective when a printer 1B does not have a function to provide the print acceptance screen. For example, assuming that a user is trying to make the printer 1B print the images captured by a scanner as a peripheral device 3, a client computer 2 sends a request to transfer the print acceptance screen to a printer 1A and then displays the print acceptance screen supplied from the printer 1A ((1) in Fig. 10). The user inputs, on the

print acceptance screen, a directive to capture images by means of the scanner and designates the printer 1B as a place to print. The client computer 2 sends a print request, including an acquisition request, not only to the printer 1A which sends the print acceptance screen, but also to the printer 1B designated as the place to print ((2) in Fig. 10). When the printer 1A receives this print request, it gives the directive to capture images to the scanner and the scanner then sends the captured images to the printer 1B ((3) in Fig. 10). The printer 1B receives the images sent from the scanner and prints the images on a print record medium.

Fig. 11 is a sequence diagram which explains an example operation of the print system according to Embodiment 3. As shown in Fig. 11, the client computer 2 first requests the printer 1A to transfer the page data which composes the print acceptance screen ((1) in Fig. 11). Such a transfer request is realized, for example, when a user designates information about the location of the page data on the network by utilizing the browser. The printer 1A reads out the given page data from the page data storage unit 23 on the basis of the transfer request sent from the client computer 2 ((2) in Fig. 11) and transfers the page data to the client computer 2 which is the original requester ((3) in Fig. 11). Accordingly, the print acceptance screen will be displayed on the browser of the client computer 2.

Fig. 12 is a diagram illustrative of an example of the print acceptance screen. As shown in Fig. 12, the print

acceptance screen has: a print data specifying area D1 for specifying the location of a node with the print data existing thereat on the network; a parameter specifying area D2 for specifying given conditions to be imposed on the node where the print data exists; a print place specifying area D3 for specifying a printer to print the print data; and a print button B for giving a print executive instruction. The initial value in the print place specifying area D3 may be set as the printer 1A which has sent this print acceptance screen. If a user wants to make the printer 1B to print, the location of the printer 1B on the network will be specified instead of the printer 1A. The user inputs given information on this print acceptance screen. In Fig. 12, a scanner on the network is specified as an acquirer of the print data and various parameters (control information) are specified as conditions for the scanner to acquire the print data. Moreover, in Fig. 12, the printer 1B is specified as the print place.

When a user inputs necessary information on the print acceptance screen and selects the "PRINT" button (for example, with click operation), the client computer 2 sends a print request based on the input information to the printer 1B ((4) in Fig. 11). When the printer 1B accepts the print request sent from the client computer 2, it interprets the print request ((5) in Fig. 11) and sends an acquisition request to the peripheral device 3 indicated by URL of the print data (6) in Fig. 11). When the peripheral device 3 accepts the acquisition request sent from the printer 1B, it acquires the print data by performing its proper

processing in accordance with the conditions (parameters) necessary for the acquisition ((7) in Fig. 11) and sends the print data back to the printer 1B ((8) in Fig. 11). Subsequently, when the printer 1B receives the print data in response to the acquisition request, the printer 1B generates image data based on the print data and supplies the image data to the print engine 28, thereby performing printing ((9) in Fig. 11).

As stated above, according to Embodiment 3, it is possible to achieve advantageous effects similar to those of Embodiment 1. Specifically, even if the printer which is intended to perform printing does not have a function to provide the print acceptance screen, the print system according to Embodiment 3 can operate as long as another node having such a function exists on the network.

[Embodiment 4]

Fig. 13 is a diagram depicting a schematic structure of a print system according to Embodiment 4. Embodiment 4 is a variation of Embodiment 2 and is characterized in that a node, including a printer, on a network other than a printer to perform printing sends a print acceptance screen. This is particularly effective when a printer 1B does not have a function to provide the print acceptance screen. For example, assuming that a user is trying to make a scanner as a peripheral device 3 capture images and to make the printer 1B print the images captured by the scanner, a client computer 2 sends a request to transfer the print

acceptance screen to a printer 1A and then displays the print acceptance screen supplied from the printer 1A ((1) in Fig. 13). The user inputs, on the print acceptance screen, a directive to capture images by means of the scanner and designates the printer 1B as a place to print. The client computer 2 sends a print request, including an acquisition request, to the scanner ((2) in Fig. 13). When the scanner captures images in accordance with the image capture directive and then sends the captured images together with the print request to the printer 1B ((3) in Fig. 13). The printer 1B receives the images sent from the scanner and prints the images on a print record medium.

Fig. 14 is a diagram which explains an example operation of the print system according to Embodiment 4. As shown in Fig. 14, the client computer 2 first requests the printer 1A to transfer the page data which composes the print acceptance screen ((1) in Fig. 14). Such a transfer request is realized, for example, when a user designates information about the location of the page data on the network by utilizing the browser. The printer 1B reads out given page data from the page data storage unit 23 on the basis of the transfer request sent from the client computer 2 ((2) in Fig. 14) and transfers the page data to the client computer 2 which is the original requester ((3) in Fig. 14). Accordingly, the print acceptance screen as shown in Fig. 12 will be displayed on the browser of the client computer 2.

When a user inputs necessary information on the print

acceptance screen and selects the "PRINT" button (for example, with click operation), the client computer 2 sends a print request based on the input information to the peripheral device 3 ((4) in Fig. 14). Namely, when the "PRINT" button is selected, the browser issues the print request by designating the peripheral device 3 indicated in the section of "URL of Print data" as a new connecting counterpart (or a receiver) so that the print data acquired by the peripheral device 3 will be sent to the printer 1B, the place to print. When the peripheral device 3 receives the print request sent from the client computer 2, the peripheral device 3 performs its proper processing on the basis of the acquisition request included in the print request, thereby acquiring the print data ((5) in Fig. 14). The peripheral device 3 sends the print request to the printer 1B in order to cause the printer 1B designated as the print place to print the print data ((6) in Fig. 14). Subsequently, receiving the print data, the printer 1B generates image data based on the print data and supplies the image data, thereby performing printing ((7) in Fig. 14).

As stated above, according to Embodiment 4, the client computer 2 is capable of causing the printer 1 to print the print data existing at the peripheral device 3 on the network through the print acceptance screen provided by the printer 1. Specifically, according to Embodiment 4, the print request together with the acquisition request for the print data are sent to the peripheral device 3, and after the peripheral device 3 acquires the print data on the basis

of the acquisition request, the print request is sent to the printer 1. Accordingly, the print data existing at the peripheral device 3 is not transferred to the client computer 2 once, but is transferred directly to the printer 1. Therefore, it is possible to lighten the load on the client computer 2 and the network.

As stated above, according to Embodiment 4, it is possible to achieve advantageous effects similar to those of Embodiment 2. Specifically, even if the printer which is intended to perform printing does not have a function to provide the print acceptance screen, the print system according to Embodiment 4 can operate as long as another node having such a function exists on the network.

The present invention can be implemented also as a recording medium or program product with programs stored thereon. Examples of the recording medium includes not only hard disks (HD), DVD-RAM, flexible disks (FD), CD-ROM and the like, but also memories such as RAM and ROM and communication media such as networks. Moreover, examples of the control unit of the printer includes so-called microcomputers of which central processing unit such as CPU or MPU performs specified processing by interpreting programs.

What is claimed is:

1. A printer connected to a network, comprising:
a memory for storing a program and/or data;
a processor for executing the program; and
a print engine for executing printing on a print record medium,

wherein according to the program, the processor:
receives from a computer a print request, including
a request to a peripheral device to acquire print data;
sends the acquisition request to the peripheral; and
causes the print engine to print on the basis of the
print data sent from the peripheral device in response to
the acquisition request.

2. A printer according to claim 1, wherein
according to the program and in response to a given transfer
request sent from the computer, the processor sends page
data, which composes a print acceptance screen for sending
the print request, to the computer.

3. A printer according to claims 1 and 2, wherein
the acquisition request includes a specified condition for
the peripheral device to acquire the print data.

4. A printer connected to a network, comprising:
print request acceptance means of accepting a print
request sent from a computer, the print request including
a request to a peripheral device to acquire print data;
acquisition request means of sending the acquisition

00577078-053300

print means of performing printing on the basis of the print data accepted by the print data acceptance means.

6. A method for controlling a printer connected to a network, comprising the steps of:

sending the acquisition request to the peripheral device; and

7. A program product stored thereon for causing a control unit of a printer to perform given functions, the product comprising:

a print request acceptance function to accept a print request from a computer, the print request including a

request to a peripheral device to acquire print data;

an acquisition request function to send the request to acquire the print data to the peripheral device on the basis of the print request accepted by the print request acceptance means;

a print data acceptance function to accept the print data sent from the peripheral device in response to the acquisition request sent by the acquisition request function; and

a print function to cause a print engine to perform printing on the basis of the print data accepted by the print data acceptance function.

8. A print system comprising a printer, a computer and a peripheral device,

wherein the printer receives a print request sent from the computer, the print request including a request to the peripheral device to acquire print data, and sends the acquisition request to the peripheral device,

wherein the peripheral device acquires the print data in response to the acquisition request and sends the acquired print data to the printer, and

wherein the printer performs printing on the basis of the print data sent from the peripheral data.

9. A printer connected to a network, comprising:

a memory for storing a program and/or data;

a processor for executing the program; and

a print engine for executing printing on a print record medium,

wherein according to the program, the processor:

sends page data, which composes a print acceptance screen for a computer to request the printing of print data, to the computer in response to a given transfer request from the computer;

receives the print data that a peripheral device acquires and sends in response to a print request as the computer sends the print request to the peripheral device, the print request including a request to acquire the print data on the basis of the print acceptance screen; and

causes the print engine to print on the basis of the received print data.

10. A print system comprising a printer, a computer and a peripheral device,

wherein in response to a given transfer request from the computer, the printer sends page data to the computer, the page data composing a print acceptance screen for the computer to request the printing of print data,

wherein the computer displays the print acceptance screen on the basis of the page data sent from the printer, and sends a print request, including a request to acquire the print data, to the peripheral device on the basis of given information inputted to the displayed print acceptance screen,

wherein the peripheral device acquires the print data in response to the acquisition request included in the print request and sends the acquired print data to the printer indicated in the print request, and

wherein the printer performs printing on the basis

11. A printing method,

wherein a computer displays a print acceptance screen on the basis of page data sent from a given node,

the print acceptance screen comprising:

a first area for a user to specify a peripheral device to acquire print data;

a second area for a user to specify a given condition when the peripheral device acquires the print data; and

a third area for a user to specify a printer made to print on the basis of the print data, and

wherein the computer acquires the print data from the peripheral device specified in the first area in accordance with the given condition specified in the second area and sends an acquisition/print request for printing to the printer specified in the third area.

wherein the computer sends an acquisition/print request to the peripheral device specified in the first area

to cause the peripheral device to acquire the print data in accordance with the given condition specified in the second area and to send the acquired print data to the printer specified in the third area, thereby causing the printer to print.

This invention is composed as a printer which receives a print request from a computer, the print request including a request to a peripheral device to acquire print data, and sends the acquisition request to the peripheral device, and performs printing on the basis of the print data sent from the peripheral device in response to the acquisition request. Accordingly, the printer is capable of receiving the print data from the peripheral device instead of receiving the print data from the computer.

FIG.1

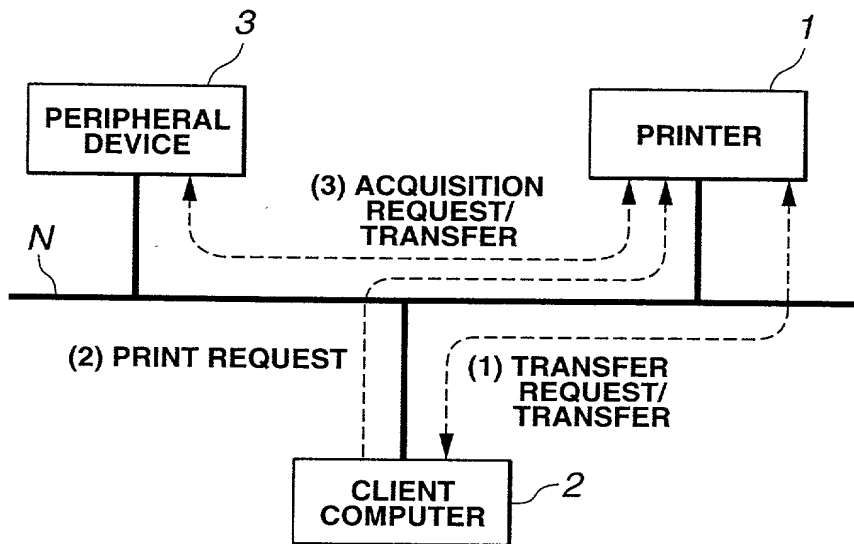


FIG.2

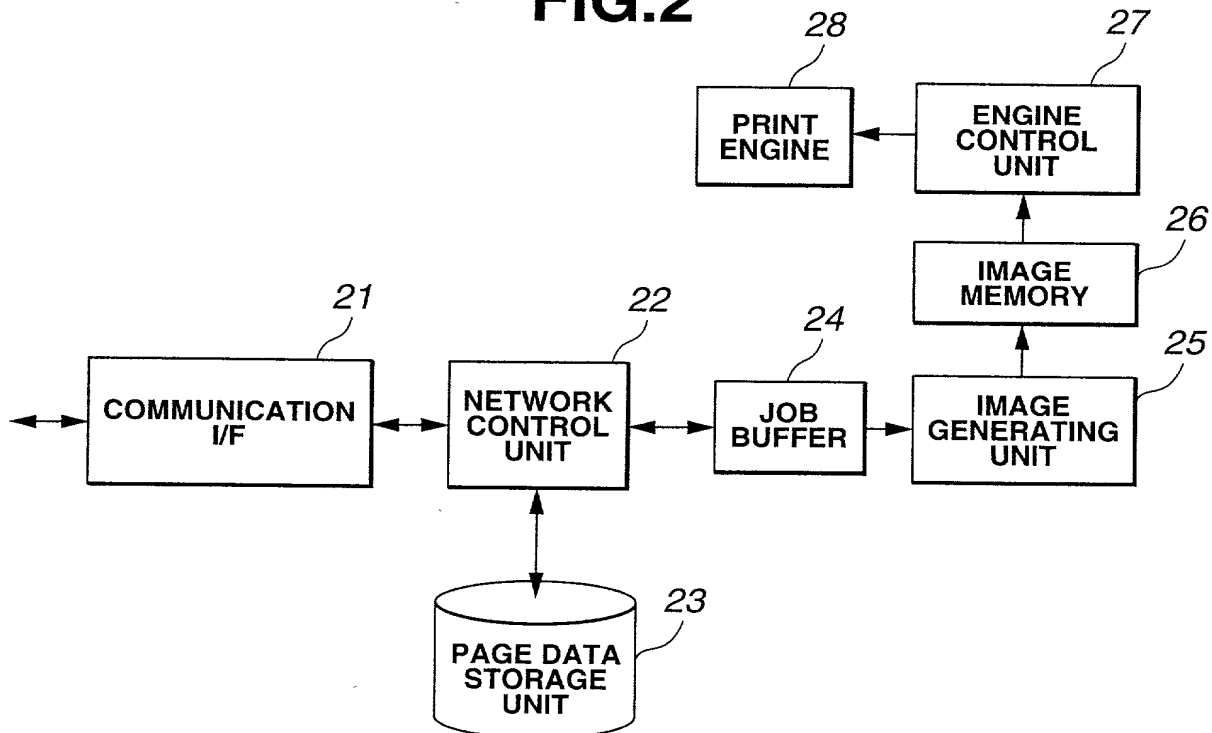


FIG.3

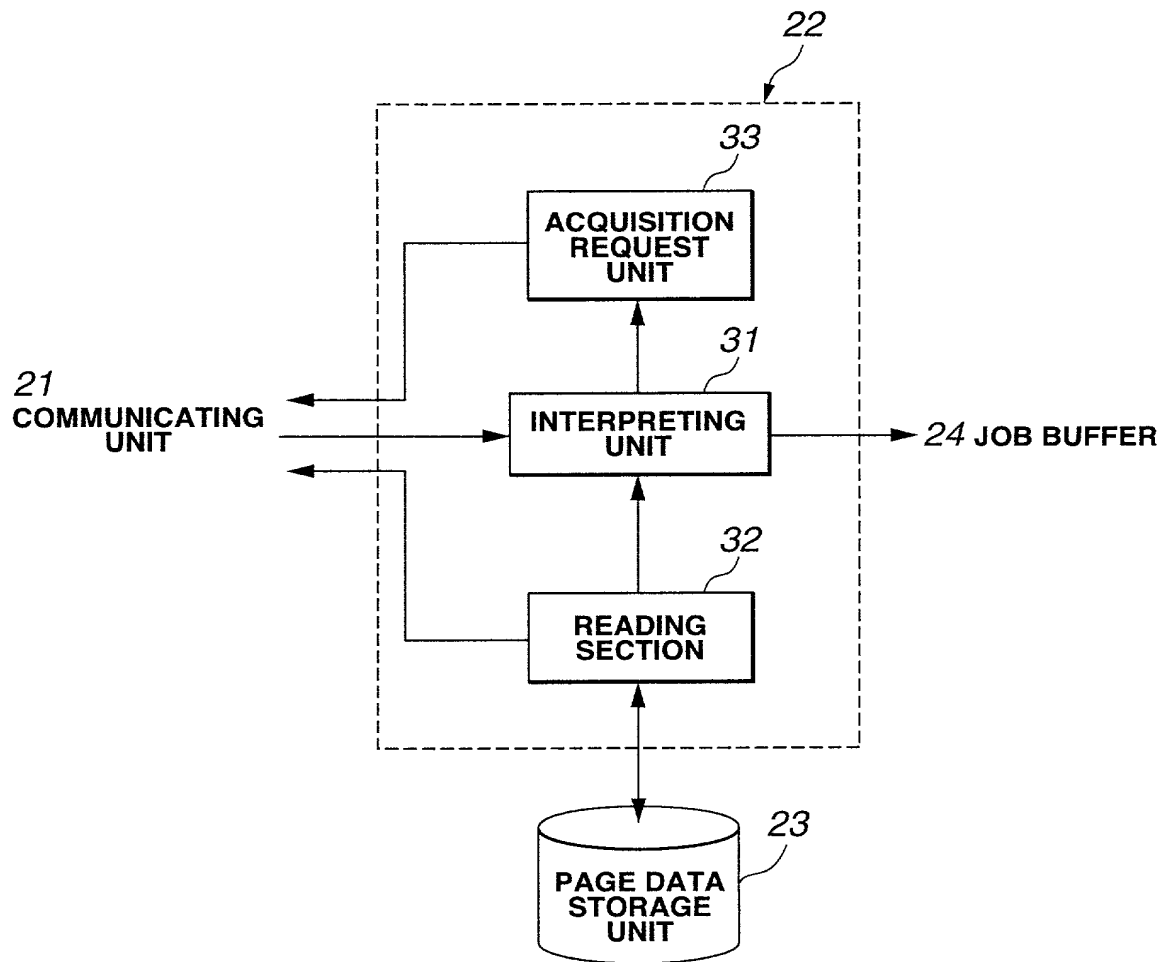


FIG.4

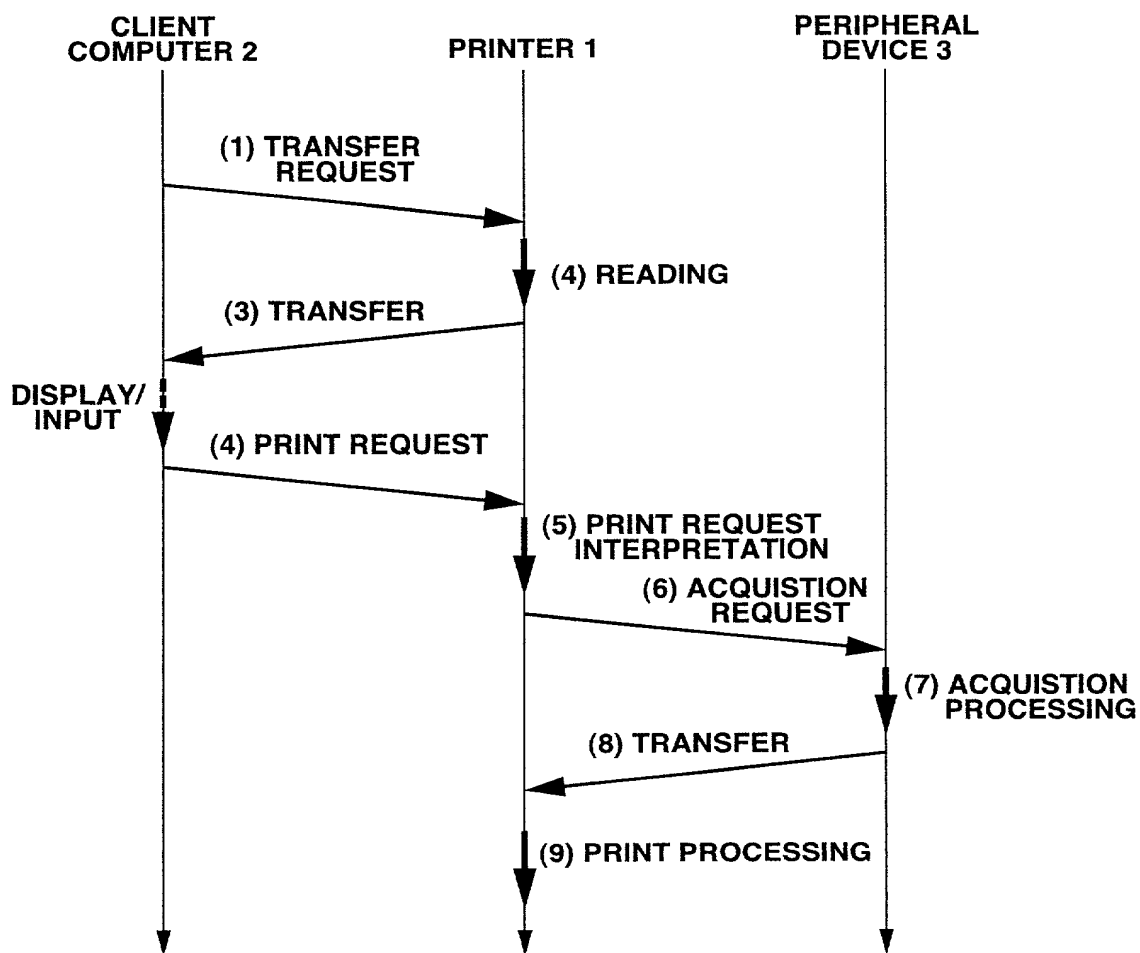


FIG.5

BROWSER [] [] [X]

FILE (F) EDIT (E) VIEW (V) JUMP (J) OPTION (O) HELP (H)

URL

URL OF PRINT OBJECT DATA

PARAMETERS

☐ NONE

☒ WITH PARAMETERS

FIG.6

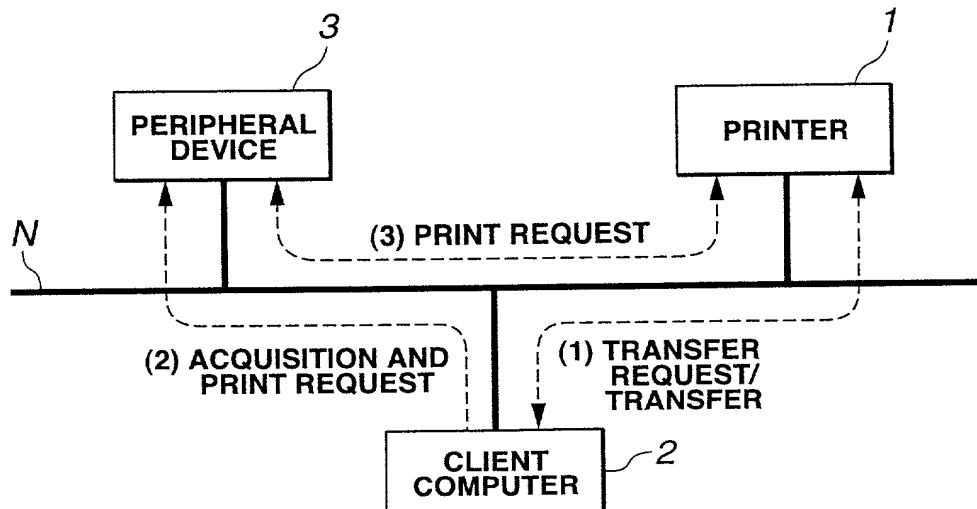


FIG.7

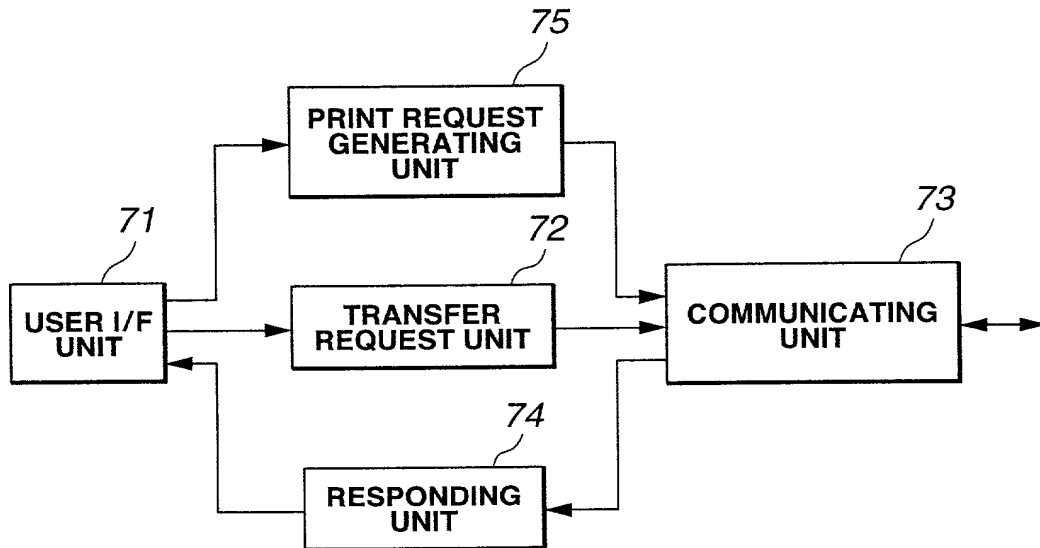


FIG.8

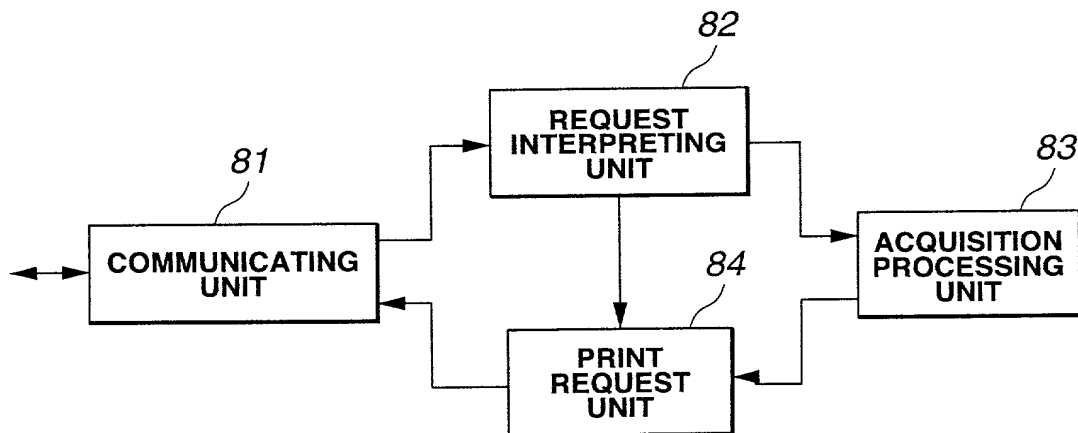


FIG.9

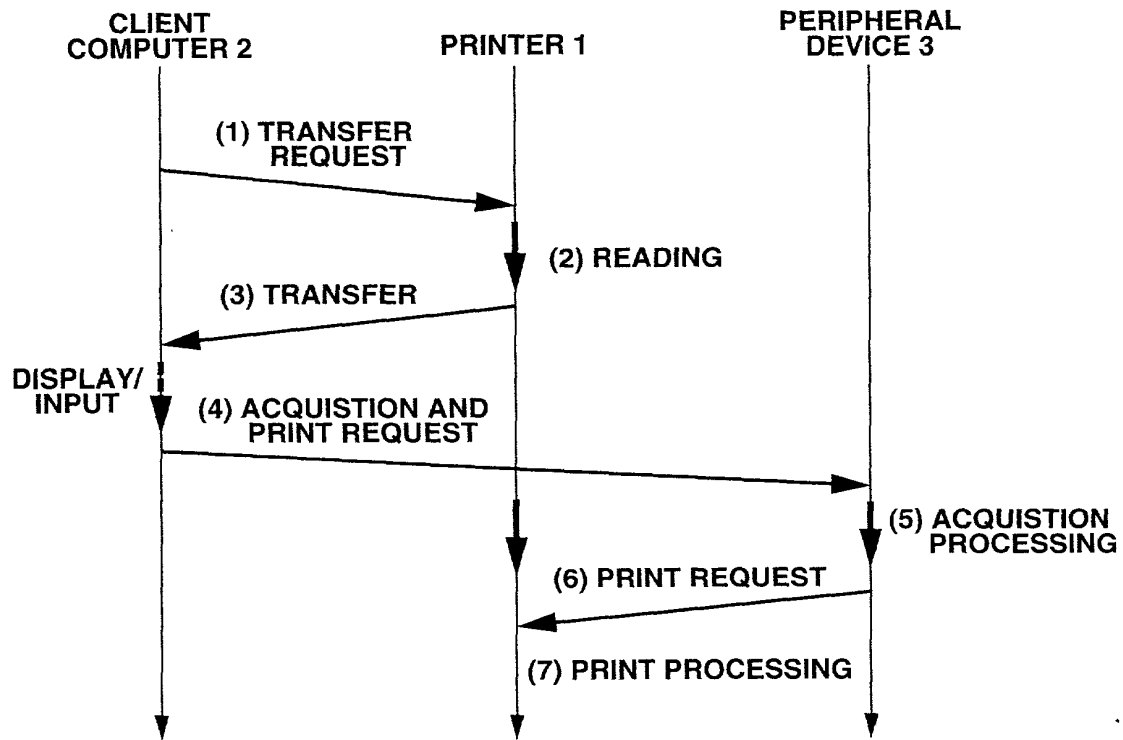


FIG.10

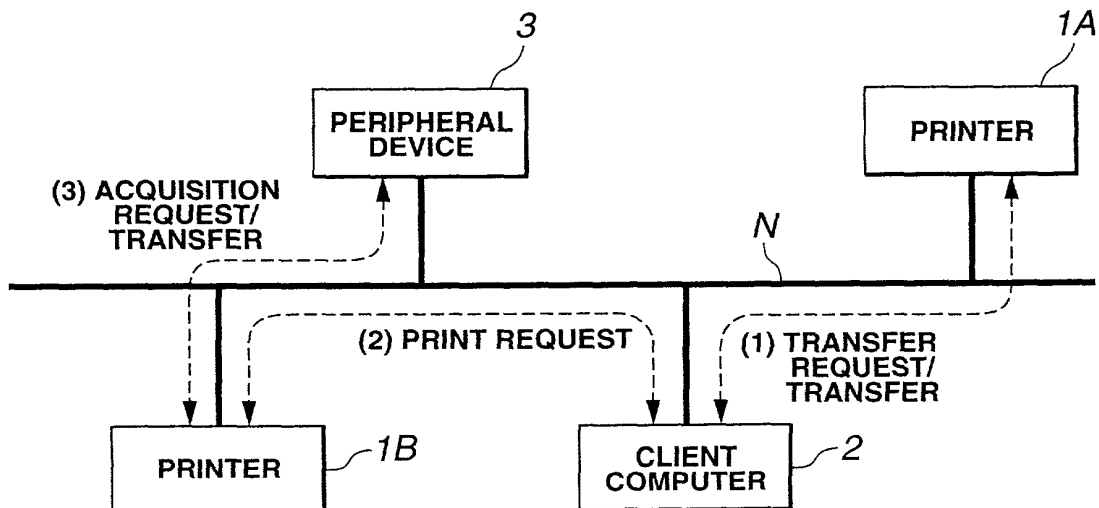


FIG.11

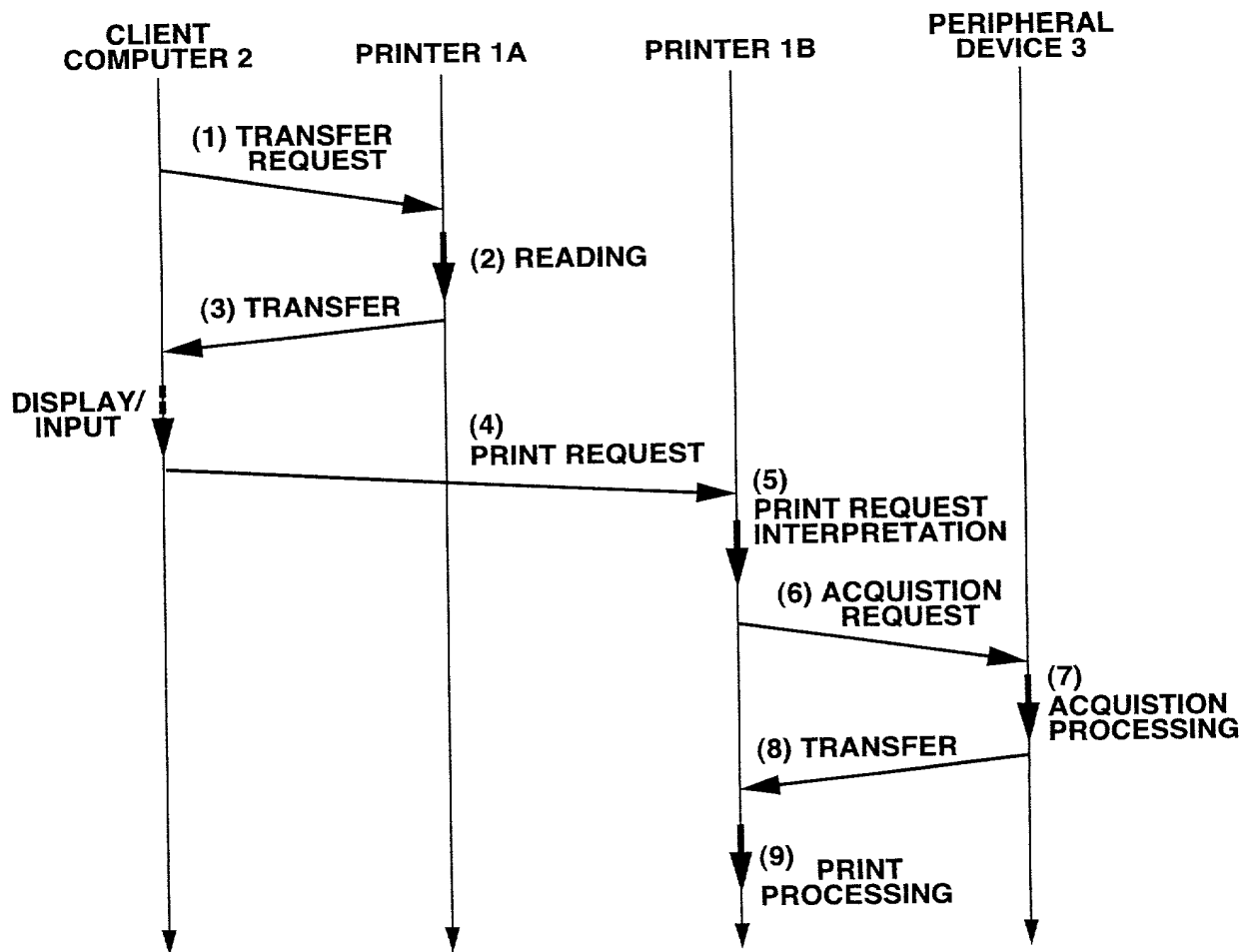


FIG.12

BROWSER [] [] [X]

FILE (F) EDIT (E) VIEW (V) JUMP (J) OPTION (O) HELP (H)

URL [v]

URL OF PRINT OBJECT DATA

D1 [v]

PARAMETERS

☐ NONE

D2 ☒ WITH PARAMETERS

PRINTER TO RECEIVE OUTPUT

D3 [v]

B

FIG.13

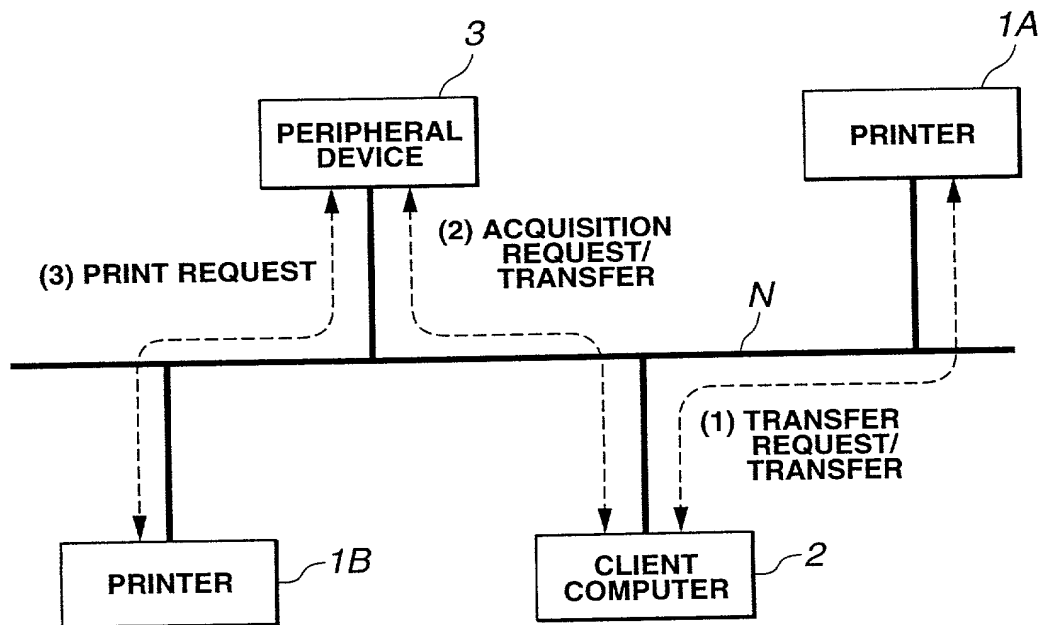
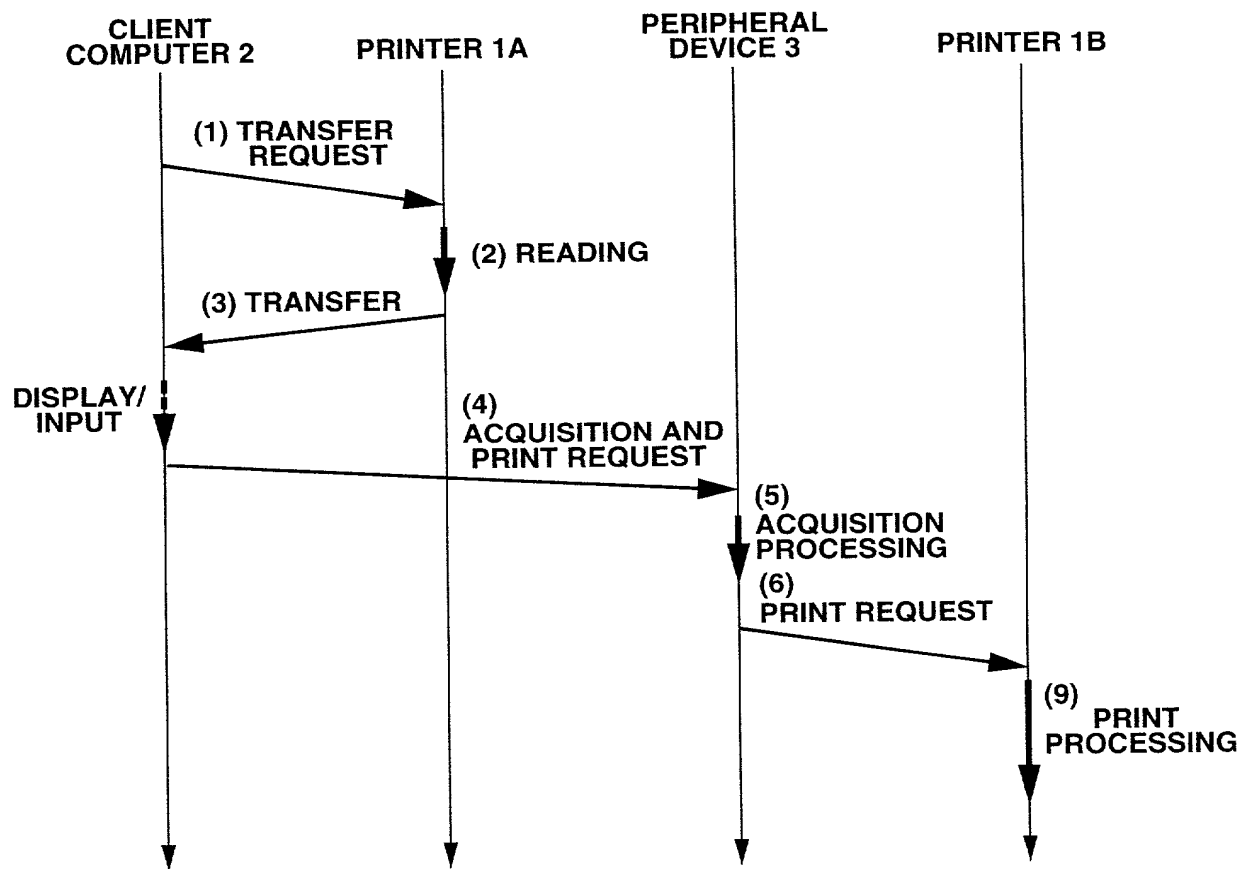


FIG.14



Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Printer Capable of Network Connectionand Method for Controlling Said Printer

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ __月__日に提出され、米国出願番号または特許協定条約国際出願番号を____とし、
（該当する場合）____に訂正されました。☐ was filed on _____
as United States Application Number or
PCT International Application Number
_____ and was amended on _____
(if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Page 1 of

Burden Hour Statement This form is estimated to take 0.4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO Commissioner of Patents and Trademarks, Washington, DC 20231.



022511

PATENT TRADEMARK OFFICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration (日本語宣言書)

私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づき下記の、米国外の国の少なくとも一カ国を指定している特許協力条約365(a)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願
11-142685

(Number) (番号)	Japan (Country) (国名)
2000-63791	Japan
(Number) (番号)	(Country) (国名)

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed

優先権主張なし

24 May 1999 (Day/Month/Year Filed) (出願年月日)	<input type="checkbox"/>
08 March 2000 (Day/Month/Year Filed) (出願年月日)	<input type="checkbox"/>

私は、第35編米国法典119条(e)項に基づいて下記の米国外特許出願規定に記載された権利をここに主張いたします。

(Application No.) (出願番号)	(Filing Date) (出願日)
-----------------------------	------------------------

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.) (出願番号)	(Filing Date) (出願日)
-----------------------------	------------------------

私は、下記の米国法典第35編120条に基づいて下記の米国外特許出願に記載された権利、又は米国を指定している特許協力条約365条(c)に基づき権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国外特許出願に開示されていない限り、その先行米国外特許出願提出日より本出願の日本国内または特許協力条約国際提出日よりまでの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

(Application No.) (出願番号)	(Filing Date) (出願日)
(Application No.) (出願番号)	(Filing Date) (出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned) (現況: 特許許可済、係属中、放棄済)
(Status: Patented, Pending, Abandoned) (現況: 特許許可済、係属中、放棄済)

私は、私自身の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じていることに基づき表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の表明を行えば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Japanese Language Declaration

(日本語宣言書)

委任状 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。(弁理士、または代理人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

Jonathan P. Osha, Reg. No. 33,986
 Alan D. Rosenthal, Reg. No. 27,833
 Richard A. Fagin, Reg. No. 39,182
 K. KaRan Reed, Reg. No. 45,036
 David E. Mixon, Reg. No. 43,809

Adenike A. Adewuya, Reg. No. 42,254
 Y. Renee Alsandor, Reg. No. 45,883
 Jeffrey S. Bergman, Reg. No. 45,925
 Scott W. Hejny, Reg. No. 45,882
 Thomas K. Scherer, Reg. No. 45,079

書類送付先

Send Correspondence to:

Jonathan P. Osha
 ROSENTHAL & OSHA L.L.P.
 700 Louisiana, Suite 4550
 Houston, Texas 77002

直接電話連絡先: (名前及び電話番号)

Direct Telephone Calls to: (name and telephone number)

Jonathan P. Osha
 (713) 228-8600

唯一または第一発明者名

Full name of sole or first inventor

Toshihiro SHIMA

発明者の署名

日付

Inventor's signature

Date

住所

Residence

Nagano-ken, JAPAN

国籍

Citizenship

Japan

私書箱

Post Office Address c/o Seiko Epson Corporation
 3-5, Owa 3-chome, Suwa-shi, Nagano

392-8502, JAPAN

第二共同発明者

Full name of second joint inventor, if any

第二共同発明者

日付

Second inventor's signature

Date

住所

Residence

国籍

Citizenship

私書箱

Post Office Address

(第三以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for third and subsequent joint inventors.)